

May 5, 2005

Mr. Christopher M. Crane
President and CNO
Exelon Nuclear
Exelon Generation Company, LLC
200 Exelon Way KSA 3-E
Kennett Square, PA 19348

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - NRC INTEGRATED
INSPECTION REPORT 05000277/2005002 AND 05000278/2005002

Dear Mr. Crane:

On March 31, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Peach Bottom Atomic Power Station Units 2 and 3. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 21, 2005, with Mr. R. Braun, Mr. J. Grimes and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding and one self-revealing finding, each of very low safety significance (Green). These findings were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs), in accordance with Section VI.A of the NRC's Enforcement Policy. If you contest any NCVs in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Peach Bottom facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (The Public Electronic Reading Room).

Mr. Christopher M. Crane

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If you have any questions, please contact me at 610-337-5209.

Sincerely,

/RA/

Mohamed Shanbaky, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos.: 50-277, 50-278
License Nos.: DPR-44, DPR-56

Enclosure: Inspection Report 05000277/2005002 and 05000278/2005002
w/Attachment: Supplemental Information

cc w/encl:

Chief Operating Officer, Exelon Generation Company, LLC
Site Vice President, Peach Bottom Atomic Power Station
Plant Manager, Peach Bottom Atomic Power Station
Regulatory Assurance Manager - Peach Bottom
Senior Vice President, Mid-Atlantic Operations
Vice President - Operations Support
Vice President - Licensing and Regulatory Affairs
Director, Licensing and Regulatory Affairs, Exelon Generation Company, LLC
Vice President, General Counsel and Secretary
Associate General Counsel, Exelon Generation Company
J. Bradley Fewell, Assistant General Counsel, Exelon Nuclear
D. Quinlan, Manager, Financial Control, PSEG
R. McLean, Power Plant and Environmental Review Division
Director, Nuclear Training
Correspondence Control Desk
D. Allard, Director, Pennsylvania Bureau of Radiation Protection
R. Fletcher, Maryland Department of Environment
Commonwealth of Pennsylvania (c/o R. Janati, Chief, Division of Nuclear Safety,
Pennsylvania Bureau of Radiation Protection)
Public Service Commission of Maryland, Engineering Division
Board of Supervisors, Peach Bottom Township
B. Ruth, Council Administrator of Harford County Council
Mr. & Mrs. Dennis Hiebert, Peach Bottom Alliance
TMI - Alert (TMIA)
J. Johnsrud, National Energy Committee, Sierra Club
Mr. & Mrs. Kip Adams
T. Snyder, Director, Air and Radiation Management Administration,
Maryland Department of the Environment (**SLO**)

Distribution w/encl: (via E-mail)

- S. Collins, RA
- J. Wiggins, DRA
- M. Shanbaky, DRP
- A. Burritt, DRP
- F. Bower, DRP - NRC Senior Resident Inspector
- D. Schroeder, DRP - NRC Resident Inspector
- S. Schmitt, DRP - NRC Resident OA
- S. Lee, RI OEDO
- J. Clifford, NRR
- G. Wunder, PM, NRR
- T. Tate, PM, NRR (Backup)
- Region I Docket Room (with concurrences)

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.: 50-277, 50-278

License Nos.: DPR-44, DPR-56

Report No.: 05000277/2005002 and 05000278/2005002

Licensee: Exelon Generation Company, LLC
Correspondence Control Desk
P.O. Box 160
Kennett Square, PA 19348

Facility: Peach Bottom Atomic Power Station (PBAPS) - Units 2 and 3

Location: 1848 Lay Road
Delta, Pennsylvania

Dates: January 1, 2005 - March 31, 2005

Inspectors: F. Bower, Senior Resident Inspector
D. Schroeder, Resident Inspector
R. Bhatia, Reactor Inspector
B. Bickett, Reactor Inspector
A. Burritt, Senior Project Engineer
L. Cheung, Senior Reactor Inspector
G. Johnson, Operations Engineer
J. Kulp, Reactor Inspector
S. Lewis, Reactor Inspector
S. McCarver, Reactor Inspector
N. McNamara, Emergency Preparedness Inspector
A. Rosebrook, Reactor Inspector
R. Treadway, Reactor Inspector Trainee
H. Williams, Senior Operations Engineer (consultant)

Approved by: Mohamed M. Shanbaky, Chief
Projects Branch 4
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000277/2005-002, 05000278/2005-002; 01/01/2005 - 03/31/2005; Peach Bottom Atomic Power Station, Units 2 and 3; Maintenance Effectiveness, Operability Evaluations, and cross-cutting areas.

The report covered a 13-week period of inspection by the resident inspectors, a senior project engineer, and two reactor inspectors. The report also covered three announced inspections by regional engineering, operations, and emergency preparedness specialist inspectors. Two Green non-cited violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, Reactor Oversight Process, Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a very low safety significance (Green), NCV of 10 CFR 50.65, paragraph b(2)(iii). Specifically, Peach Bottom Atomic Power Station (PBAPS) did not scope the outer intake structure trash racks into the Maintenance Rule when past station events showed elevated levels of debris blockage on the trash racks would upset plant stability and increased the likelihood of a scram on both units due to loss of main condenser vacuum.

This finding is greater than minor because it was associated with the protection against external factors attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability during power operations. The finding is of very low safety significance (Green) because it did not affect both the likelihood of a plant transient and unavailability of mitigation equipment or functions. Specifically, PBAPS personnel were able to recover intake basin level during the January 2004 and January 2005 icing events prior to a scram being procedurally required.

A contributing cause to the failure is related to the identification subcategory of the Problem Identification and Resolution cross-cutting area because PBAPS did not identify the requirement to scope the intake structure trash racks into the Maintenance Rule. (Section 1R12)

Cornerstone: Mitigating Systems

- Green. A self-revealing Green NCV of 10 CFR 50.63, "Loss of All Alternating Current Power," was identified for PBAPS's inadequate station blackout coping analysis for the configuration that existed from September 14 until December 1, 2004. Lack of design documentation and administrative controls resulted in inadequate configuration control of the SBO system that would have

de-energized the power feed to its control power circuit following a station blackout event.

This finding is greater than minor because it was associated with the configuration control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of safe shutdown systems to respond to a station blackout event. The finding is of very low safety significance (Green) because the issue was a design deficiency of a defense in depth support system to long-term heat removal that was subsequently verified not to represent an actual loss of safety function.

A contributing cause for the inadequate configuration control was related to the organization subcategory in the Human Performance cross-cutting area, in that procedure and design documents did not support maintaining SBO system operability. (Section1R15)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at approximately 85 percent power and was recovering from a condensate pump trip and subsequent recirculating pump runback that occurred during the previous inspection period. The unit returned to full power on January 1. On January 22, operators reduced Unit 2 power to approximately 78 percent in response to lowering intake canal level and degraded condenser vacuum that resulted from ice and debris blocking flow through the outer intake structure. The unit returned to full power on January 22. On February 1, Unit 2 commenced a power reduction to support a planned shutdown and maintenance outage to replace the 071D safety/relief valve. The unit was returned to full power on February 6, 2005. Unit 2 was at full power for the remainder of the period except for brief periods of planned testing and rod pattern adjustments.

Unit 3 began the inspection period operating at full power. On January 23, operators reduced the Unit 3 power level to 93 percent in response to lowering intake canal level and degraded condenser vacuum that resulted from ice and debris blocking flow through the outer intake structure. The unit returned to full power by January 24. On February 10, power was reduced to 40 percent and single-loop operation was entered to repair the 'A' reactor recirculation pump end-of-cycle trip breaker. The unit was returned to full power on February 12, 2005. On March 24, power suppression testing was commenced and Unit 3 power was reduced to approximately 55 percent. The unit returned to full power on March 30. Unit 3 was at full power for the remainder of the period except for brief periods of planned testing and rod pattern adjustments.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (1 Sample)

a. Inspection Scope

Adverse Weather Readiness. The inspectors reviewed Peach Bottom Atomic Power Station's (PBAPS) preparation for frazzle ice conditions. The review was conducted in accordance with Administrative Guideline (AG)-108, "Preparation for Severe Weather," Revision 12, and Abnormal Operations Procedure (AO)-29.2, "Discharge Canal to Intake Pond Cross-Tie Gate Operation and Frazzle Ice Mitigation," Revision 10. The reviews were conducted during the period from January 19 to January 28, and included selected walkdowns of the outer screen structure to observe ice removal from the trash racks. The inspectors discussed these actions with PBAPS's maintenance and engineering personnel. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

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1R02 Evaluation of Changes, Tests, or Experiments (7 Evaluation, 15 Change Samples)

a. Inspection Scope

The inspectors reviewed seven safety evaluations (SE) that were completed during the past two years. The SEs reviewed were distributed among the Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones. The selected SEs were reviewed to verify that changes to the facility or procedures as described in the Updated Final Safety Analysis Reports (UFSAR) were reviewed and documented in accordance with 10 CFR 50.59, and that the safety issues pertinent to the changes were properly resolved or adequately addressed. The reviews also included the verification that the licensee had appropriately concluded that the changes and tests could be accomplished without obtaining license amendments.

The following seven safety evaluations were reviewed:

- 04-00634 Unit 2 Drywell Equipment Drain Sump Logic Reconfiguration
- 03-00519 Safety Evaluation for Disabling Rod Drift Alarm for Control Rod 18-11
- 03-00378 Removal of Unit 2 Automatic Recirculation Pump Motor Generator Set trips and Generator Runback on Loss of Stator Water Cooling
- 03-00318 Unit 3 Reactor Recirculation Pump (RRP) Trip and Main Generator Runback Elimination on Loss of Stator Water Cooling
- 2003-009 Safety Evaluation for Disabling Recombiner Low Steam Flow Trip
- 2003-003 Technical Requirements Manual Section 3.0 Shutdown Statements Revision
- 2003-002 Technical Requirements Manual Section 3.5 Hydrogen Monitor Channel Calibration Frequency Change

The inspectors also reviewed 15 screening evaluations for changes, tests, and experiments for which the licensee determined that safety evaluations were not required. This review was performed to verify that PBAPS's threshold for performing safety evaluations was consistent with 10 CFR 50.59. The listing of the screening evaluations reviewed is provided in Attachment 1, section 1R02.

In addition, the inspectors reviewed the administrative procedures that were used to control the screening, preparation, and issuance of the safety evaluations to ensure that the procedure adequately covered the requirements of 10 CFR 50.59.

The inspectors reviewed condition reports (CR) associated with 10 CFR 50.59 issues and plant modification issues to ensure that PBAPS was identifying, evaluating, and correcting problems associated with these areas and that the planned or completed corrective actions for the issues were appropriate. The listing of the condition reports reviewed is provided in Attachment 1, section 4OA2.

b. Findings and Observations

No findings of significance were identified.

1R04 Equipment Alignment (3 Samples)

a. Inspection Scope

Partial System Walkdowns: The inspectors performed three partial system walkdowns during this inspection period to verify system and component alignment and to note any discrepancies that could impact system operability. The inspectors verified selected portions of redundant or backup systems or trains were available while systems or trains were out-of-service. The inspectors reviewed selected valve positions, electrical power availability, and the general condition of major system components. This inspection activity represented three samples. The partial walkdowns included the following systems:

- Unit 2 high pressure coolant injection (HPCI) following maintenance and realignment
- E-1, E-2, and E-4 diesel generators during E-3 outage
- Unit 3 reactor core isolation cooling (RCIC) during Unit 3 HPCI inoperability

b. Findings

No findings of significance were identified.

1R05 Fire Protection

1. Routine Plant Area Tours (10 Samples)

a. Inspection Scope

The inspectors reviewed the fire protection plan, Technical Requirements Manual, and the respective pre-fire action plan procedures to determine the required fire protection design features, fire area boundaries, and combustible loading requirements for the areas examined during this inspection. The inspectors then performed walkdowns of the following areas to assess control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The following 10 fire areas were reviewed:

- Diesel generator building (Bay B) (Fire Zone 132)
- Unit 3 emergency switchgear rooms (E13, 23, 33, 43) and battery rooms (A, B, C, & D) (Fire Zone 117)
- Unit 3 reactor building HPCI pump room (Fire Zone 12C)
- Unit 3 RRP MG set room (Fire Zone 62)
- Unit 2 lube oil tank room (Fire Zone 88)
- Common turbine deck area (Fire Zone 80)

- Unit 2 condensate pump pit room (Fire Zone 78X)
- Unit 2 'C' reactor feed pump turbine lube oil storage (Fire Zone 78K)
- Unit 3 reactor building 135 drywell area (Fire Zone 32)
- Unit 2 reactor building 135 drywell area (Fire Zone 24)

b. Findings

No findings of significance were identified.

2. Annual Fire Brigade Drill Observation (1 Sample)

a. Inspection Scope

The inspectors observed plant personnel performance during one annual fire brigade drill on February 15, 2005, to evaluate the readiness of station personnel to respond to plant fire events. Fire drill scenario 2005-01 simulated a Class B fire (lubricating oil) from the Unit 3 reactor recirculation pump MG set room concurrent with a sprinkler system inoperability.

The inspectors reviewed the drill scenario and PBAPS Nuclear fire protection procedures, RT-F-101-922-2, "Fire Drill," and FF-01, "Fire Fighting and Pre-fire Strategy Plan." The inspectors also reviewed the information and strategies in the pre-fire plan, PF - 12C, associated with Unit 3 recirculation pump MG set room. The review included a verification that the pre-fire strategy plan was consistent with fire protection design features, fire boundaries, and combustible loading assumptions listed in the fire protection plan for Peach Bottom. The inspectors observed the fire brigade members in their protective clothing, turnout gear, and self-contained breathing apparatus to ensure protective clothing was properly donned. The inspectors evaluated the adequacy of fire fighting equipment available at the scene and the brigade leader's evaluation of the scenario and fire fighting capability. The inspectors observed the fire brigade's fire fighting techniques, as well as the communication between the fire brigade and control room. The inspectors evaluated the post drill critique to ensure drill objectives and acceptance criteria were met and any drill weaknesses were discussed.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

1. Quarterly Observation of Licensed Operator Requalification Training (1 Sample)

a. Inspection Scope

The simulator scenarios included the T-102 primary containment control, steam leak in the drywell, and the inadvertent opening of a safety/relief valve (SRV) on January 25, 2005. The inspectors observed and evaluated critiques of the operators' performance to

ensure that any performance errors were detected and corrected. The inspectors focused on the control room supervisor's satisfactory completion of critical tasks, including proper and timely identification and classification of emergencies. The inspectors also evaluated whether the operators adhered to Technical Specifications, emergency plan implementation, and the correct use of the emergency operating procedures. The inspectors discussed the training, simulator scenario, and critique with operators, shift supervision, and training instructors. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

2. Biennial Review of Licensed Operator Regualification Program (1 Sample)

a. Inspection Scope

The inspectors reviewed documentation of operating history since the last requalification program inspection and discussed facility operating events with the resident staff. Documents reviewed included NRC inspection reports and PBAPS Issue Reports (IR) that involved human performance issues, Licensee Event Reports (LERs) and licensee audits. The inspectors also confirmed that industry events were addressed. This inspection activity represented one sample.

The inspection consisted of a review of both the biennial written exam and operating test for 2004 and the annual operating test for 2005. The sample plans for the exams in 2004 and 2005 were reviewed. The inspectors reviewed six comprehensive biennial written exams administered in 2004. The inspectors reviewed five simulator scenarios and 12 Job Performance Measures (JPMs) administered during the on site inspection week to ensure the quality of these exams met the criteria established in NUREG-1021, Rev. 9, "Operator Licensing Examination Standards for Power Reactors" and 10 CFR 55.59.

The inspectors observed the administration of operating tests to three crews. The operating test consisted of two simulator scenarios and one set of five JPMs (two in-plant and three control room) administered to each individual. As part of the observation, the inspectors assessed the adequacy of licensee examination evaluation processes and security measures.

The inspectors interviewed three operators for feedback regarding the implementation of the licensed operator requalification program. The inspectors also reviewed operator feedback, Quality Assurance audits, Operations Training self-assessments, and recent plant and industry events to ensure that the training staff modified the program, when appropriate, to include the recommended changes.

The effectiveness of remedial training was assessed through the review of evaluation records for the past two years, including the remediation of the crew that failed during the inspection week. The retest and evaluation were also observed.

Conformance with operator license conditions was verified by a review of the following records:

- Attendance records for seven operators over the current two year period.
- Seven operators' medical records for a six-year period.
- Proficiency watch-standing and reactivation records. A sample of seven licensed operator watch-standing documentation and two operator reactivations.

The inspectors observed simulator performance during the conduct of the examinations, and reviewed simulator performance tests and discrepancy reports to verify compliance with the requirements of 10 CFR 55.46. Peach Bottom is committed to the American National Standards Institute (ANSI) 3.5-1985 Standard. The inspectors confirmed these sections of ANSI Standard: 3.5-1985: Section 3.1 (Simulator Capabilities), Section 3.2 (Simulator Environment), Section 3.4 (Training Capabilities) and Section 4.0 (Performance Criteria) were implemented for the Peach Bottom simulator. The inspectors reviewed simulator configuration control and performance testing through interviews and the review of facility simulator procedures; open and closed simulator condition reports and discrepancy reports; and the review of test results.

On March 28, 2005, the inspectors conducted an in-office review of licensee requalification exam results for 2004 and 2005. The inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, Operator Requalification Human Performance Significance Determination Process (SDP). The inspectors verified that:

- Crew failure rate on the dynamic simulator was less than 20% (failure rate was 10% for 2004 and 2005).
- Individual failure rate on the dynamic simulator test was less than or equal to 20% (failure rate was 6.7% in 2004 and 5% in 2005).
- Individual failure rate on the walkthrough test (JPMs) was less than or equal to 20% (failure rate was 0% for both 2004 and 2005).
- Individual failure rate on the comprehensive biennial written exam in 2004 was less than or equal to 20% (failure rate was 1.6%).
- More than 75% of the individuals passed all portions of their exam (91.7% in 2004 and 93.3% in 2005 of the individuals passed all portions of the exam).

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (4 Samples)

1. Failure to Scope Outer Intake Structure Trash Racks

a. Inspection Scope

In January 2004 and January 2005, ice blockage at the outer intake screens resulted in reduced intake structure water levels, and reactor power was reduced to maintain condenser vacuum. Investigation following the January 2005 event showed degradation in the condition of the trash racks below the water line due to significant buildup of rust nodules and debris. PBAPS's root cause report, prompt investigations, and corrective actions for these events were reviewed

b. Findings

Introduction. The inspectors identified a very low safety significance (Green), non-cited violation (NCV) of 10 CFR 50.65, paragraph b(2)(iii). Specifically, PBAPS failed to scope the outer intake structure trash racks into the Maintenance Rule when past station events showed that elevated levels of debris blockage on the trash racks would upset plant stability and increased the likelihood of a scram on both units due to loss of vacuum.

Description. PBAPS has a common outer intake structure that allows water to flow from the Conowingo Pond into the PBAPS's intake basin. The flow first goes through the intake structure trash racks (24 total). Primary function of these racks is to prevent logs and larger items from damaging the outer traveling screens. The trash racks are non-movable structures that have to be manually cleared of trash and debris on some periodicity by station divers due to blockage concerns. After the trash racks, water flows through a set of traveling screens and enters the intake basin. The circulating water and safety-related raw cooling water systems for Peach Bottom Units 2 & 3 draw water from intake basin.

The inspectors found that PBAPS properly included the outer traveling water screens into the scope of the Maintenance Rule because the failure of the screens could cause a drop in intake basin level, followed by a loss of circulating water leading to a loss of vacuum and a resultant scram. However, PBAPS had not recognized that the trash racks, a sub-system of the outer screen structure, poses the same potential challenge to plant stability as the failure of the traveling water screens. Specifically, excessive trash rack blockage can also lead to decreased intake basin levels and a resultant scram. PBAPS did not scope the trash racks, system 29H, into the scope of the Maintenance Rule.

In January 2004, the trash racks experienced ice blockage and it affected the intake basin levels and condenser vacuum. This forced approximately a 20 percent reduction in power on both units to aid in recovering main condenser vacuum. Maintenance and Operation personnel cleared enough of the ice to recover level in the intake basin and avoid scrambling the reactors. PBAPS personnel did not re-evaluate the trash rack

structure for inclusion in the Maintenance Rule scope and did not appropriately evaluate possible accumulation of debris and potential water flow blockage below the surface. Although the plant performance monitoring criterion of a transient resulting in a 20 percent power reduction was met, PBAPS personnel concluded that this event was not a functional failure because the trash rack had previously been excluded from the Maintenance Rule and its primary function is to protect the traveling screens from large debris.

In January 2005, PBAPS experienced a similar ice blockage event in conjunction with extensive debris clogging from rust nodules formed on the trash racks. This blockage event decreased intake basin levels that lowered condenser vacuum and forced a power reduction on both units. Station personnel were able to remove enough ice to recover vacuum for the reduced power level. Corrective actions for this event are addressing maintenance issues associated with debris cleaning frequency, documentation, and review of potential missed opportunities in 2004. The Maintenance Rule applicability was not addressed until the inspectors raised the issue with the system engineer and the maintenance rule coordinator.

Both events, in 2004 and 2005, required the use of procedure AO 28.2, Response to High/Low River Level, and SE-3, Loss of Conowingo Pond. SE-3 requires a scram if there is any indication that the intake basin, as a suction source for the circulating water pumps, is threatened and not immediately recoverable.

Analysis. The performance deficiency was the failure to appropriately include the outer intake structure trash racks within the scope of the Maintenance Rule when station events revealed excessive blockage on the trash racks caused plant transients and could potentially cause a scram. This issue was more than minor because it was associated with the Initiating Events Cornerstone attribute of protection against external factors and affected the cornerstone objective of limiting those events that upset plant stability. Specifically, the failure to scope the sub-systems of the outer intake structure into the Maintenance Rule program and a lack of monitoring the trash racks and outer intake structure with respect to debris blockage can challenge the station's ability to maintain appropriate intake basin water levels that can cause a loss of vacuum and scram. The issue was screened as very low safety significance (Green) in Phase I of the NRC Manual Chapter 0609, Appendix A, Attachment 1, Significance Determination Process for Reactor Inspection Findings for At-Power Situations. This finding did not affect both the likelihood of a plant transient and the likelihood that mitigation equipment or functions would be unavailable. Specifically, PBAPS personnel were able to recover intake basin level during both events prior to a scram being procedurally required.

The inspectors considered the finding to be indicative of a weakness with respect to the cross-cutting aspect of Problem Identification and Resolution, under the subcategory of identification. Following the January 2004 and January 2005 plant events caused by intake structure blockage, PBAPS personnel did not evaluate the outer intake structure trash racks and other sub-systems for inclusion within the scope of the Maintenance Rule. Maintenance Rule guidance is clear that operating events experienced at nuclear

plants are bases for re-evaluating the inclusion of systems or structures into the scope of the Maintenance Rule.

Enforcement. 10 CFR 50.65 (b)(2)(iii) requires, in part, that the scope of the monitoring program specified in paragraph (a)(1) include non-safety related structures, systems, and components whose failure could cause a reactor scram or actuation of a safety-related system. Contrary to the above, as of March 4, 2005, PBAPS failed to include the trash racks and other sub-systems of the outer intake structure within the scope of the monitoring program as specified in 10 CFR 50.65 (a)(1). The inclusion of the outer intake structure and trash racks in the scope of the monitoring program is necessary because excessive debris blockage on this non-safety related structure can cause a reactor scram due to loss of the circulating water and vacuum. However, because the violation was determined to be of very low safety significance (Green) and because the failure to scope the trash rack sub-system into the Maintenance Rule has been entered into PBAPS's corrective action program (Issue 307815), this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000277, 278/2005002-01, Failure to Include the Outer Intake Structure Trash Racks Into the Scope of the Maintenance Rule.**

2. Routine Maintenance Effectiveness Issues

a. Inspection Scope

The inspectors reviewed the follow-up actions for issues identified on systems, structures, or components (SSCs) and the performance of those SSCs to assess the effectiveness of PBAPS's maintenance activities. The following three equipment performance issues were reviewed:

- Unit 2 Electrohydraulic Control (EHC) System Fluid Quality and Filter Clogging (AR 288414)
- National Electrical Manufacturers Association (NEMA) I contactor binding (AR 289436, AR 205249)
- Station Blackout Line Availability/Reliability

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (4 Samples)

a. Inspection Scope

The inspectors reviewed PBAPS's risk evaluations and contingency plans for selected planned and emergent work activities to verify that appropriate risk evaluations were performed and to assess PBAPS's management of overall plant risk. The inspectors compared the risk assessments and risk management actions against the requirements of 10 CFR 50.65(a)(4) and the recommendations of NUMARC 93-01 Section 11,

Enclosure

“Assessment of Risk Resulting from Performance of Maintenance Activities.” The inspectors verified that risk assessments were performed when required and appropriate risk management actions were identified.

The inspectors attended planning meetings and discussed the risk management of the activities with operators, maintenance personnel, system engineers, and work coordinators to verify that risk management action thresholds were identified correctly. The inspectors also verified that appropriate implementation of risk management actions were performed. The following four planned and emergent work activities were reviewed:

- Verify SRV Unit 2 71D Temperature Recorder Instrument Accuracy (A1487657-06)
- Unit 3 ‘A’ End-of-Cycle (EOC) RRP Trip Breaker & Cubicle Maintenance (A1502245/C0212722)
- Unit 2, DPIS-2503B Gauge Replacement (A1431841/R0941108)
- Unit 3 Reactor Core Isolation Coolant (RCIC) Drain Line Steam Leak Repair (A1468602/C0209827)

In addition, the inspectors reviewed the assessed risk configurations against the actual plant conditions and any in-progress evolutions or external events to verify that the assessments were accurate, complete, and appropriate for the issues. The inspectors performed control room and field walkdowns to verify that compensatory measures identified by the risk assessments were appropriately performed.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions (2 Samples)

a. Inspection Scope

The inspectors reviewed plant computer and recorder data, operator logs and approved procedures while evaluating the performance of operations, engineering, and instrument and maintenance personnel in response to two non-routine evolutions. The inspectors assessed personnel performance to determine whether the operator’s response was appropriate and in accordance with procedures and training. The inspectors also assessed whether engineering and instrument and maintenance personnel followed procedures, as required, and were properly trained and briefed prior to performing work evolutions. The following two non-routine evolutions were observed or reviewed:

- Unit 3 Single Loop Operation to Replace ‘A’ EOC RRP Trip Breaker
- Planned Outage to Replace Unit 2 71D SRV

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (7 Samples)

1. Station Blackout (SBO) Power Supply to Emergency Buses with SBO Transformer Tap Loss of Function

a. Inspection Scope

The SBO system was declared operable on September 14, 2005, when the SBO control power was aligned to its alternate source. Subsequently, PBAPS personnel discovered that the alternate control power source would not be energized during a Loss of Offsite Power (LOOP) event, placing the SBO system in an unanalyzed condition. On December 1, 2004, an engineering evaluation determined that the SBO system had been inoperable since September 14, 2004. A temporary modification, to install a qualified source of SBO control power, was completed on December 4, 2004, and the SBO system was returned to an operable condition. The inspectors reviewed PBAPS's prompt investigation and immediate corrective actions in response to discovery of the unanalyzed condition.

b. Findings

Introduction. A self-revealing Green NCV of 10 CFR 50.63, "Loss of All Alternating Current Power," was identified for PBAPS's inadequate station blackout coping analysis for the configuration that existed from September 14 until December 1. Lack of design documentation and administrative controls resulted in inadequate configuration control of the SBO system that would have de-energized the power feed to its control power circuit following a station blackout event.

Description. On September 12, 2004, the control power transformer in the SBO switchgear overheated and disabled the normal control power supply for the SBO system. PBAPS personnel declared the SBO system operable on September 14, 2004, upon completion of restoration activities, including re-alignment of SBO control power to an alternate (maintenance) source fed from normal offsite power source. PBAPS's operability assessment included a review of Technical Specification (TS) 3.8.1, Technical Requirements Manual (TRM) 3.18, and the associated bases documents. The operability assessment also included a review of additional operating procedures and design basis documents. The inspectors review of these documents and the UFSAR found no information regarding the importance of the normal control power feed nor any prohibition on using an alternate control power source. The operability assessment did not recognize that the alternate control power source was a "maintenance-only" source that would not be available during a LOOP. A technical review by Engineering personnel was not requested as part of the operability determination.

On November 29, Operations requested an LS-AA-105 operability evaluation from Engineering. On December 1, Engineering concluded that the SBO system was inoperable because the alternate control power supply would be de-energized during an SBO event and this would de-energize control power feeds to the SBO transformer tap changer. During an SBO event, Procedure SE-11.1 requires that the tap changer be placed in the "max boost" position before re-energizing the emergency vital buses. Without control power, the position of the SBO transformer tap changer could not be changed. This was a condition that had not been evaluated in the SBO coping analysis and was a condition that could result in an undervoltage condition on the emergency vital buses and the associated safety-related loads.

Subsequently, on January 25, 2005, Engineering completed a new calculation case, PE 0154, Revision 5A, Attachment H, to analyze the expected vital bus voltages during the post-SBO sequence and assuming that the SBO transformer tap changer was fixed at its normal position (position 12). The calculation results demonstrated that with its transformer tap changer fixed at position 12, the SBO power source would be capable of starting and running the minimum loads required to achieve safe shutdown. However, it also demonstrated some required 480 volt motor loads may stall and drop out during low voltage transients in the post-SBO sequence. PBAPS personnel demonstrated that upon return to steady state voltage conditions, the dropped out 480 volt motor loads would either restart automatically or be restarted through operator action using existing plant procedures.

Analysis. The performance deficiency is that PBSPS did not have an adequate station blackout coping analysis for the configuration that existed from September 14 until December 1. The existing coping analysis was contingent upon the control power for the SBO system to be from a qualified source that would not be lost during a LOOP. An SBO coping analysis is required by 10 CFR 50.63, Loss of All Alternating Current Power. This finding is self-revealing because it was not identified through a licensee program or process that was specifically intended to identify the problem. This issue is greater than minor because it was associated with the Mitigating Systems cornerstone attribute of configuration control and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. As configured, the control power to the SBO tap changer would be lost during a loss of offsite power event when powered from its maintenance source. Consequently, the SBO transformer tap changer would not function to regulate voltage levels to safe shutdown equipment powered from the vital emergency buses. This issue screened as very low safety significance (Green) in Phase I of the SDP, because the issue is a design deficiency of a defense in depth support system to long term heat removal that was subsequently verified not to represent an actual loss of safety function.

A contributing cause to the inadequate operability determination of the SBO system was related to the Human Performance cross-cutting area in the organization subcategory. PBAPS design documents, procedures, drawings, and training did not adequately identify that the use of the alternate control power supply would leave the SBO system in an unanalyzed condition.

Enforcement. 10 CFR 50.63(C)(2), Alternate AC Source states, in part, the alternate AC power source will constitute acceptable capability to withstand station blackout provided an analysis is performed which demonstrates that the plant has the capability from the onset of the station blackout until the alternate AC source and required shutdown equipment are started and lined up to operate. Contrary to the above, between September 14 and December 1, PBAPS did not have an adequate analysis to demonstrate that the alternate AC power source, the Conowingo Line, and its associated transformer would be capable of starting and operating the required shutdown equipment as it was configured, without automatic tap changing ability. Issues associated with this event (Condition Reports 278233, 311464, and 305042) were entered into PBAPS's corrective action program. Because this violation is of very low safety significance and PBAPS has entered this finding into its corrective action program, this violation is being treated as a non-cited violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000277, 278/2005002-02, Station Blackout Power Supply to Emergency Buses with SBO Transformer Tap Loss of Function.**

2. Routine Operability Evaluations

a. Inspection Scope

The inspectors reviewed six Issue Reports (IRs) and operability evaluations that were selected based on risk insights to assess the adequacy of the evaluations, the use and control of compensatory measures, and compliance with the Technical Specifications. The inspectors verified that the operability determinations were performed in accordance with Exelon Administrative Procedure LS-AA-105, "Operability Determinations." As applicable, associated adverse condition monitoring (ACM) plans, engineering technical evaluations (TE) and operational and technical decision making (OTDM) issue resolution documentation were also reviewed. The inspectors verified these processes were performed in accordance with the procedures listed in Attachment 1. The inspectors used the Technical Requirements Manuals, the Updated Final Safety Analysis Report, and associated Design Basis Documents as references during these reviews. The issues reviewed included:

- Evaluate Unit 2 SRV-71D Operability Based on Elevated Tail Pipe Temperature (AR 262210, AR A1487657-05)
- Unit 3 SRV 71A, Elevated Tailpipe Temperature (AR 288912, AR 218774)
- Unit 2 DPIS-2503B, Reactor Building to Torus Vacuum Breaker (AR 295178)
- Unit 3 Rod Stuck Following Scram Time Testing (Issue 291095)
- Emergency Service Water Piping to E2 Emergency Diesel Generator (AR 299802)
- Unit 3 Condensate Storage Tank Level (AR 301802)

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (1 Sample)b. Inspection Scope

The inspectors conducted a review of the effects on Unit 2 of a specific operator work-around and equipment deficiency. The review was conducted to assess the impact of the operator workaround listed below on the reliability, availability, and potential for misoperation of systems. The inspectors evaluated the effects of identified items on the ability of operators to respond in a correct and timely manner to plant transients and accidents. The inspectors also reviewed this deficiency to determine if any item complicating the operators' ability to implement emergency operating procedures had not been identified by PBAPS as an operator work-around. The inspectors reviewed PBAPS Administrative Procedure OP-AA-102-103, "Operator Work-Around Program," for implementation in this case. This inspection activity represented one sample.

- Rod control during reactor manual control system (RMCS) timer replacement

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (9 samples)a. Inspection Scope

The inspectors reviewed nine risk-significant plant modification packages selected from the design changes that were completed within the past two years. The review was to verify that: (1) the design bases, licensing bases, and performance capability of risk significant structures, systems, or components had not been degraded through modifications; and, (2) modifications performed during increased risk configurations did not place the plant in an unsafe condition.

The following nine modifications were selected for review:

- 02-00687 RRP Seal Purge System/Configuration for 3AP034 Upgrade
- 03-00443 Fuel Pool Cooling to/from Residual Heat Removal Cross-tie not in accordance with UFSAR Appendix A
- 04-00562 Unit 2 RRP MG Set Voltage Regulator Modification
- 03-00378 Permanent Removal of Unit 2 Reactor Recirculation Pump trips and Generator Runback on Loss of Stator Water Cooling
- 03-00318 Unit 3 RRP Trip and Main Generator Runback Elimination on Loss of Stator Water Cooling
- 04-00517 Installation of Unit 2 Jet Pump Auxiliary Wedges
- 03-00409 Local Leak Rate Testing Reduction Initiative of 3R14
- 03-00551 Unit 3 R14 Analyses for Jet Pump 9/10 and Jet Pump 18
- 03-00352 Modify Orifice Plates Downstream of MO-3-10-089D

The selected plant modifications were distributed among Initiating Event, Mitigating System, and Barrier Integrity cornerstones. For these selected modifications, the inspectors reviewed the design inputs, assumptions, and design calculations to determine the design adequacy. The inspectors also reviewed field change notices that were issued during the installation to confirm that the problems associated with the installation were adequately resolved. In addition, the inspectors also reviewed the post-modification testing, functional testing, and instrument and relay calibration records to determine readiness for operations. Finally, the inspectors reviewed the affected procedures, drawings, design basis documents, and UFSAR sections to verify that the affected documents were appropriately updated.

For the accessible components associated with the modifications, the inspectors also walked-down the systems to detect possible abnormal installation conditions.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (6 Samples)

a. Inspection Scope

The inspectors observed portions of post-maintenance testing activities in the field and reviewed selected test data at the job site. The inspectors observed whether the tests were performed in accordance with the approved procedures and assessed the adequacy of the test methodology based on the scope of maintenance work performed. In addition, the inspectors assessed the test acceptance criteria to verify whether the test demonstrated that the tested components satisfied the applicable design and licensing bases and the Technical Specification requirements. The inspectors reviewed the recorded test data to evaluate whether the acceptance criteria were satisfied. The inspectors reviewed six post-maintenance tests performed in conjunction with the following maintenance activities:

- ECR PB-03-00624, RMCS Timer Replacement
- SI3F-23-82-XXC2, Partial for Replacement of FC-3-23-108, Unit 3 HPCI Flow Controller
- ST-O-052-411-2, E1 Diesel Generator Fast Start and Full Load Test Following Speed Switch Replacement
- RT-O-052-253-2, E3 Diesel Generator Inspection Post-Maintenance Functional Test
- C0212650, Replace Cell #42 in 3 BD001 Battery
- ST-R-003-485-2, Control Rod Drive Scram Insertion Timing of Selected Control Rods Test

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (6 Samples)a. Inspection Scope

The inspectors reviewed and observed portions of surveillance tests, and compared test data with established acceptance criteria to verify the systems demonstrated the capability of performing the intended safety functions. The inspectors also verified that the systems and components maintained operational readiness, met applicable Technical Specification requirements, and were capable of performing the design basis functions. The six surveillance tests reviewed and observed included:

- ST-O-011-301-2, "Standby Liquid Control Pump Functional Test for Inservice Testing"
- SI2M-60F-TR2-B2M2, "Response Time Test of Drywell High Pressure Scram Channel B"
- ST-O-60F-420-3, "Turbine Control Valve Fast Closure Scram and End-Of-Cycle Recirculation Pump Trip Functional Test"
- S12L-2-72-D1FQ, "Unit 2 Emergency Core Cooling System (ECCS) 'D' Compensated Trip System Functional Test"
- ST-I-076-103-3, "Primary Containment Isolation System (PCIS) Group III Logic System Functional Test"
- ST-O-51H-200-2, "Station Blackout Line Operability Verification"

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (1 Sample)a. Inspection Scope

The inspectors reviewed one temporary modification (ECR 04-646 001) that removed the radwaste vent radiation monitor trouble alarms. The radwaste vent radiation monitor is not operational while waiting for parts to repair the sample pump. The inspectors verified that (1) the design bases, licensing bases, and performance capability of risk significant SSCs had not been degraded through these modifications, and (2) that implementation of the modifications did not place the plant in an unsafe condition. The inspectors verified the modified equipment alignment through control room instrumentation observations; UFSAR, drawing, procedure, and work order reviews; and plant walkdowns of accessible equipment.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP4 Emergency Action Level and Emergency Plan Changes (2 Samples)a. Inspection Scope

During the period of January 11 - March 31, 2005, the NRC received and acknowledged the changes made to Peach Bottom's Emergency Plan. In accordance with 10 CFR 50.54(q), PBAPS determined that the changes did not decrease the effectiveness of the Plan and concluded that the Emergency Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR 50. The inspector conducted a sampling review of the Plan changes which could potentially result in a decrease in effectiveness. This review does not constitute an approval of the changes and, as such, the changes are subject to future NRC inspection. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 4, and the applicable requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (1 Sample)1. 2004 Maintenance Performance Trenda. Inspection Scope

PBAPS identified an adverse trend in the quality of maintenance performance throughout the maintenance department during 2004 as indicated by the results of training evaluations, observations by external organizations, and the frequency and significance of events. PBAPS conducted a common cause analysis (CCA) of 42 action requests (AR) generated during 2004 to identify the underlying causes of the adverse trend in maintenance performance. PBAPS used the results of the common cause analysis to develop revisions to the Maintenance Improvement Program.

This issue was selected for review due to the significance that maintenance has on safety systems supporting the cornerstones of Initiating Events and Mitigating Systems. The inspectors reviewed the CCA and the 42 associated ARs. The review was performed to verify:

- The technical adequacy and thoroughness of the CCA
- The technical adequacy and thoroughness of the ARs analyzed in the CCA
- Identification of appropriate corrective actions in the common cause analysis
- The effectiveness of the corrective actions identified in the ARs

A complete listing of documents reviewed are included in the Attachment.

b. Findings and Observations

No findings of significance were identified. The inspectors did not identify concerns with the common cause analysis or the planned corrective actions.

2. Cross-References to PI&R Documented Elsewhere

Section 1R12 describes a finding for failure to scope the outer intake structure trash racks into the Maintenance Rule when past station events showed elevated levels of debris blockage on the trash racks could cause a scram to both units due to loss of vacuum.

3. Routine Review and Screening of Identification and Resolution of Problems

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance or program issues for follow-up, the inspectors performed routine screening of issues entered into the licensee's corrective action program. This review was accomplished by reviewing copies of issue reports, attending daily screening meetings, and accessing PBAPS's computerized database.

4OA4 Cross Cutting Aspects of Findings

1. Cross-References to Cross Cutting Issues Documented Elsewhere

Section 1R15 describes a finding for inadequate operability determination. A contributing cause was related to the organization subcategory of the Human Performance cross-cutting area. PBAPS design documents, procedures, drawings, and training did not adequately identify that the use of the alternate control power supply would leave the SBO system in an unanalyzed condition.

4OA6 Meetings, Including Exit

1. Exit Meeting

On April 21, 2005, the resident inspectors presented the inspection results to Mr. R. Braun, Mr. J. Grimes and other PBAPS staff, who acknowledged the findings. The inspectors confirmed that proprietary information was not included in the inspection report.

2. Annual Assessment Meeting

On March 29, 2005, Dr. M. Shanbaky, the resident inspection staff, and other NRC staff held a public meeting with Mr. R. Braun and other PBAPS Generation Company staff, to

discuss the results of the NRC's assessment of Exelon's performance at Peach Bottom Atomic Power Station for the period January 1, 2004 through December 31, 2004. The handouts from the meeting are available electronically from the NRC's document system (ADAMS) under accession number ML051040366. Following the meeting, the NRC staff held a session to accept public comment and respond to public questions.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company

R. Braun, Site Vice President
J. Grimes, Plant Manager
P. Davison, Engineering Director
D. Lewis, Operations Director
M. Newcomer, Senior Manager, Design Engineering
C. Behrend, Senior Manager, Plant Engineering
G. Stathes, Maintenance Director
J. Mallon, Regulatory Assurance Manager
D. Foss, Regulatory Assurance
B. Artus, Prin. Requal. Training Instructor
P. Nieisen, NRC Exam Dev. Coord.
J. Popielarski, Manager, Operator Training
M. Weidman, Electrical Design Manager
C. Wiedersum, Operations Support Manager

U. S. Nuclear Regulatory Commission

M. Shanbaky, RI, DRP, Branch Chief
G. Wunder, NRR, Project Manager
G. Ottenberg, RI, DRP, Reactor Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000277/2005002-01 05000278/2005002-01	NCV	Failure to Scope Outer Intake Structure Trash Racks (Section 1R12)
05000277/2005002-02 05000278/2005002-02	NCV	Station Blackout Power Supply to Emergency Buses with SBO Transformer Tap Loss of Function (Section 1R15)

Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R02: Evaluations of Changes, Tests, or Experiments

10 CFR 50.59 Screening Evaluations

02-00687	Reactor Recirculation Pump Seal Purge System/Configuration for 3AP034 Upgrade
03-00443	Fuel Pool Cooling to/from RHR Cross-tie not in accordance with FSAR Appendix A
04-00562	Unit 2 Recirculation Pump MG Set Voltage Regulator Modification
2003-060	Screening for Disabling H2 Recombiner Low Steam Flow Trip
04-00517	Installation of Unit 2 Jet Pump Auxiliary Wedges
03-00409	Local Leak Rate Testing Reduction Initiative of 3R14
03-00551	Unit 3 R14 Analyses for Jet Pump 9/10 and Jet Pump 18
03-00352	Modify Orifice Plates Downstream of MO-3-10-089D
03-00329	Station Blackout Undervoltage Trip Function
04-00055	Raise Main Steam Line Tunnel Temperature High Setpoint
04-00075	Unit 3 CAC/CAD Flwo Switch Replacement
98-00896	Undervoltage Trip Device Missing From 3A & 3B Air Coolers
03-00646	Service Water Valves - 14"
03-00275	PEDM Remedial Action for Recirculation Pump Motor Drop
02-00826	3AP034:Replace with a New 4 th Generation Pump

Section 1R04: Equipment Alignment

ST-O-013-350-3	RCIC Valve Alignment and Filled and Vented Verification
ST-O-013-501-2	RCIC Valves Remote Position Indication Verification
SO 23.1.A-2	High Pressure Coolant Injection System Setup for Automatic or Manual Operation
SO 52A.8.A	Diesel Generator Daily Shutdown Inspection

Section 1R05: Fire Protection

Fire Protection Program Manual

PF-132, Rev. 3	Pre-fire Strategy Plan Diesel Generator Building El. 127 Fire Zone 132
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PF-10, Rev. 0	Pre-fire Strategy Plan "3B" RHR Pump and HX Room Rx Bldg 91'6" and 116' El. Fire Zone 10
PF-117, Rev. 4	Pre-fire Strategy Plan Unit 3 Emerg Batt/SWGR RMS TB3-135 Fire Zone 117
PF-62, Rev. 1	Pre-fire Strategy Plan Unit 3 Rx Bldg HPCI Room 88 El. Fire Zone 62
PF-12C, Rev. 3	Pre-fire Strategy Plan U/3 Rx Recirc Pump MG Set Rm Radwaste Bldg 135" El. Fire Zone 12C
RT-0-037-324-2, R7	Monthly Inspection of Outside Operator Area Fire Extinguishers
RT-0-037-321-3, Rev. 4	Monthly Inspection of Unit 3 Reactor Building Fire Extinguishers
RT-0-037-320-3, Rev. 4	Monthly Inspection of Unit 3 Turbine Building Fire Extinguishers
RT-0-037-322-2, Rev. 4	Monthly Inspection of Radwaste Area Fire Extinguishers

Section 1R11: Licensed Operator Requalification

Simulator scenarios:

PSEG0719R, Rev. 10	Hydraulic ATWS
PSEG0731R, Rev. 5	Emergency Blowdown due to Torus low level condition
PSEG0730R, Rev. 5	ATWS with Loss of High-Pressure Feed
PSEG0712R, Rev. 10	ATWS with Steam Leak in Drywell
PSEG0742R, Rev. 0	Blowdown due to Loss of High Pressure Feed
PSEG0729R, Rev. 6	LOCA While in Shutdown Cooling
PSEG0721R, Rev. 10	Loss of All RPV Level Instruments

Job Performance Measures (JPM):

Reset 'A' Recirculation System Flow Limit
 Manually Initiate Core Spray System
 Reopen the MSIVs after a GP-1 Isolation
 SJAЕ Operation During a Low Vacuum Transient (OT-106)
 Earthquake/RCS Leak EAL Classification
 Containment Venting via the 6" ILRT Line from the Torus (T-200C-2)
 Defeating RWCU Interlocks (T-227-2)
 Transfer RFPs to Master Level Control
 SFSI EAL Classification
 Drywell Cooler Fan Trip Bypass (T-223-3)
 Closing a Stuck Open MSIV (Alt. Path)
 Drywell Venting via the 2" Vent (Alt. Path)

Annual Simulator Performance Tests (2000-2004):

Heat Balance
 Manual Scram from 100% Power
 Loss of Feedwater from 100% Power
 Stability/Mass Balance (100% Power)
 Dual Recirc Pump Trip
 Max Suction Line Break with LOP

Simulator Malfunction Tests (2004):

FWC07 - RFP Lockout
EHL03 - Pressure Regulator Oscillation
HPC02 - HPCI Spurious Start
RBW01 - RBCCW Pump Trip
Plant Transient-Simulator Comparison Tests (2004-2005):

Dual Recirc Runback Unit 2 (12/13/04)
Low Pressure Group 1 from EHC Card Failure (12/22/04)
Unit 2 Cycle 16 Startup (2/17/05)
'2B' Condensate Pump Trip (1/26/05)
Unit 2 Power Down EOL (2/18/05)
LER #2772004001, Manual Scram Resulting from Low Condenser Vacuum due to a Failed Feedwater Turbine Expansion Joint
LER #2772004003, Automatic scram due to an EHC Malfunction
TQ-AA-106-0114, Rev. 0, Exelon Nuclear, Simulator Demonstration Examination, Crew Competency Evaluation Form
TQ-AA-106-0113, Rev. 0, Exelon Nuclear, Simulator Demonstration Examination, Individual Competency Evaluation Form
TQ-AA-106-0101, Rev. 0, STA/IA Simulator Evaluation
TQ-AA-106-0115, Rev. 0, Exelon Nuclear, Simulator Demonstration Examination, Shift Manager Competency Evaluation Form
TQ-AA-300, Rev. 0, Exelon Nuclear, Reactivity Management
TQ-AA-106, Rev. 12, Exelon Nuclear, Licensed Operator Requal Training Program
TQ-AA-106-0304, Rev. 3 (for 2004 and 2005 exams):
Attachment 1 - LORT Program Classroom
Attachment 2 - LORT Program Simulator Summary
Attachment 3 - Category Subject Hours Distribution
Attachment 4 - Category Distribution
Attachment 6 - LORT Exam JPM Distribution
Attachment 7 - LORT Dynamic Exam Distribution

2004 Biennial RO/SRO Written Exam Question Matrix
2004 Crew Scenario Distribution
2004 Annual Exam JPM Selection Matrix
2004 JPM ID to Category Matrix
FASA ASA #263063, Peach Bottom 2004 LORT Self Assessment Report

Section 1R12: Maintenance Implementation

AR 00289435
AR 00205249
System 51H - Station Blackout Line - % Unavailability Minutes: 03/2003 - 03/2005.
System 51H - Station Blackout System Health Reports: 01/2004 - 12/2004.
AR 00162900
AR 00176556
AR 00216811
ST-O-51H-200-2, Station Blackout Line Operability Verification, Rev. 7.

Peach Bottom Maintenance Rule Bases Information - System 51H, Station Blackout
A1505836
CR 261621
CR 266554
CR 260567
CR 246374
CR 291281

Section 1R14: Personnel Performance During Non-routine Plant Evolutions

A299909
A1480757
CR 245737
CR 244503, Assign #6

Section 1R15: Operability Evaluations

ACM Plan dated October 18, 2004
Unit 2 SRV 71D
CC-AA-309-101, Engineering Technical Evaluations
OP-AA-108-111, Adverse Condition Monitoring and Contingency Planning
OP-AA-106-101-1006, Operational and Technical Decision Making Process
IR#288912, Operability Determination for ACM Plan
Action Request (AR) A1487657, Unit 2-71D SRV
Unit 2-71D SRV, ODTM dated January 4, 2005
CR 291095
ON-106, Stuck Control Rod - Procedure
ON-106, Stuck Control Rod - Bases
A1487657
AR 299802
A1500479
Work Order R0941108
AR 295178 #5, #07
IC-C-11-00701, Calibration of ITT Barton Differential Pressure Indicating Switches
S12D-7-2503-B1CE Calibration check of Suppression Chamber - Reactor Building Pressure
Instrument DPIS 2503B
CR 301802
Work Order M1317741
A1306492
ST-O-51H-200-2, Station Blackout Line Operability Verification
P-T-13, SBO System Design Basis Document

Section 1R19: Post-Maintenance Testing

ST-M-57B-742-3, Unit 3B 125/250 VDC Battery Service Test
ST-M-57B-732-3, Unit 3B 125/250 VDC Modified Battery Discharge Performance Test
A1501689
C0212650, Replace Cell #42 in 3BD001 Battery
CR 303390

RT-O-052-253-2, E-3 Diesel Generator Inspection Post-Maintenance Functional Test
ST-O-052-413-2, E-3 Diesel Generator Fast Start and Full Load Test
ST-O-052-411-2, E1 Diesel Generator Fast Start and Full Load Test
RT-O-052-251-2, E1 Diesel Generator Inspection Post-Maintenance Functional Test

Section 1R22: Surveillance Testing

ST-0-51H-200-2 Rev. 7	Station Blackout Line Operability Verification
SE-11.1 Rev. 3	Operating Station Blackout Line During a LOOP Event
RT-O-100-505-2 Rev. 20	Emergency Operating Procedure Tool Inventory
SO 51H.7.B Rev. 5	SBO Disconnect Switch Operations
ST-I-07G-103-3 Rev. 12	Primary Containment Isolation System (PCIS) Group III Logic System Functional Test

Section 1R23: Temporary Plant Modification

ECR PB 04-00646 001 RI 761, Trip with Loss of 220-34 Newlinville Line
A1484253

Section 1E4: Emergency Action Level (EAL) and Emergency Plan (E-Plan) Changes

Exelon Standard Emergency Plan and Implementing Procedures
Peach Bottom Annex Emergency Plan

Section 4OA2: Problem Identification and Resolution

Action Requests

195555 - Procedure step not performed satisfactorily.
196952 - Wrong circuit board was pulled and reworked.
196952 Assignment 16 - Apparent Cause Evaluation - Wrong circuit board was pulled and reworked.
202116 - 3A Stator Cooler end bell flange bolts improperly installed.
203749 - "A" Recirc Motor trip due to maintenance activity.
203749 Assignment 16 - Apparent Cause Evaluation - "A" Recirc Motor trip due to maintenance activity.
204068 Assignment 20 - Root Cause Analysis - Alterex collector ring maintenance human performance errors.
207212 - PCIS Grp 1 isolation signal inadvertently initiated.
207212 Assignment 1 - Prompt Investigation - PCIS Grp 1 isolation signal inadvertently initiated.
208597 - Noted increase in documented maintenance planning errors.
208597 Assignment 14 - Common Cause Evaluation - Noted increase in documented maintenance planning errors.
209136 Assignment 35 -
215116 - Dropped socket adapter down inlet pipe.
215116 Assignment 23 - ACIT- Dropped socket adapter down inlet pipe.
220321 - Personnel Contamination - HPCI room.

220622 - Loose fasteners found on relief valve hangar.
 220622 Assignment 2 - Apparent Cause Evaluation - Loose fasteners found on relief valve hangar.
 221780 - Oil deflector shaft ring installed backwards.
 223827 - Unsatisfactory fit-up inspection.
 229154 -052-011 not directly used for E2 EDG Adapter Installation.
 229154 Assignment 3 - Root Cause Analysis - —052-011 not directly used for E2 EDG Adapter Installation.
 230183 - E4 EDG NDE required for cylinder adapter.
 230183 - Assignment 3 - Apparent Cause Evaluation - E4 EDG NDE required for cylinder adapter.
 230211 - E4 EDG incorrect tubing bender used for new installation.
 230411 - Poor maintenance workmanship on EDG.
 231567 - Instrument tubing configuration during E-4 TSA Gauge Panel Mod.
 233873 - Bolt not fully engaged on E-2 exhaust manifold cover.
 237061 - Valving causes excess flow check valve operation.
 237061 Assignment 9 - Apparent Cause Evaluation - Valving causes excess flow check valve operation.
 252501 - Lifted lead on U3 HPCI.
 252501 Assignment 16 - Root Cause Analysis - Lifted lead on U3 HPCI.
 253696 - Heat Stress Trends.
 253696 Assignment 2 - Apparent Cause Evaluation - Heat Stress Trends.
 254751 - Work performed outside of work process on SLMMS Mod.
 255353 - Welding rod issue location.
 255494 - 2A/C C/S Triangle Room funnel overflowing (Freeze Seal)
 255494 Assignment 8 - Apparent Cause Evaluation - 2A/C C/S Triangle Room funnel overflowing (Freeze Seal)
 256541 - FME Trends during 2R15.
 256541 Assignment 2 - Common Cause Analysis - FME Trends during 2R15.
 256833 - Wrong bellows rupture disk removed.
 257226 - 2B RHR Piping FME
 257498 - 2B Recirc MG set voltage regulator capacitor failure.
 257498 Assignment 8 - Apparent Cause Evaluation - 2B Recirc MG set voltage regulator capacitor failure.
 257865 - Contract welder receives electric shock and burn.
 257865 Assignment 5 -Apparent Cause Analysis - - Contract welder receives electric shock and burn.
 262471 - LPRM Detector leads swapped.
 266636 - CREV Testing line up steps missed.
 268510 - Work completed without signing on clearance.
 268510 Assignment 2 - Common Cause Analysis - Work completed without signing on clearance.
 271404 - Hot Tool Room Contamination.
 271404 - Assignment 2 - Apparent Cause Evaluation - Hot Tool Room Contamination.
 271482 - 2004 Maintenance performance reflects erosion in standards.

Issue Reports

AR 1396522

AR 1401402

AR 1446640

AR 00234892

AR 00247108	AR 00260059	AR 00279456	AR 00272790
AR 00241555	AR 00254520	AR 00271239	AR 00256668
AR 00263410	AR 00293983	AR 00293988	AR 00198387
AR 00257498	AR 00249879	AR 00264624	AR 00311831

CR 279073 - Adverse trend in maintenance corrective action closeout.
 CR 287967 - Incorrect component manipulated during surveillance.

Procedures

LS-AA-104-1000	Exelon 50.59 Resource Manual, Revision 2
LS-AA-104	Exelon 50.59 Review Process, Revision 4
CC-AA-102	Design Input and Configuration Change Impact Screening, Revision 9
CC-AA-103	Configuration Change Control, Revision 8
CC-AA-104	Document Change Requests, Revision 7
IC-11-02010	Post-Modification Acceptance Testing Maintenance Procedure
IC-11-02011	Unit 2 Recirculation MG Set Voltage Regulator Tuning,

Design Basis Documents

P-T-18	Reactor Vessel and Internals, Revision 8
P-S-04	High Pressure Service Water

Drawings

G-080-VC-317	Recirculation Pump MG Set Voltage Regulator Schematic Diagram, Sheet 2, Revision 0
234R287	Main Generator Stator Winding Cooling System P&ID, Revision 6
E-5343	Station Blackout Substation Single Line Diagram

LIST OF ACRONYMS

ACM	adverse condition monitoring
ADAMS	agencywide documents access and management system
ANSI	American National Standards Institute
AO	abnormal operating
AR	action request
CCA	common cause analysis
CFR	Code of Federal Regulations
CR	condition report
CRD	control rod drive
ECCS	emergency core cooling system
EHC	electrohydraulic
EOC	end-of-cycle
HPCI	high pressure coolant injection
IMC	inspection manual chapter

IP	inspection procedure
IR	issue report
JPM	job performance measure
LER	licensee event report
LOOP	loss of offsite power
MG	motor generator
NCV	non-cited violation
NEMA	National Electrical Manufacturers Association
NRC	Nuclear Regulatory Commission
OTDM	operational technical decision making
PARS	publicly available records
PBAPS	Peach Bottom Atomic Power Station
PCIS	primary containment isolation system
QA	quality assurance
RCIC	reactor core isolation coolant
RHR	residual heat removal
RMCS	reactor manual control system
RRP	reactor recirculation pump
RPT	recirculation pump trip
SBO	station blackout
SDP	significance determination process
SE	safety evaluation
SRV	safety/relief valve
SSC	system, structure, or component
TE	temperature element
TRM	Technical Requirements Manual
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report